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Results of adolescent health risk assesment on exposure to habitat water peroral factor in conditions of a large industrial city

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Abstract

© Published under licence by IOP Publishing Ltd. Results of the non-carcinogenic risk assessment on ingestion of chemical substances with drinking water showed that the risk value corresponded to the allowable level of the non-carcinogenic risk (HQ < 1) for the major part of elements in all zones. The excess of the allowable level is observed only in oil products in the 1stzone (2.05) and the 4thzone (1.04). However, the total hazard index (HI) on combined peroral ingestion of chemical compounds and elements with drinking water in selected zones of the city of Kazan implies a low risk level for adolescents living in the 1stand the 4thzones (3.7 and 3.59) correspondingly, and is dangerous for health. According to the results of analysis carried out in all zones, the following basic critical organs and systems were identified: blood, CNS, kidneys, endocrine system, cardiovascular system, skeletal system and teeth. The total hazard indices in the 1stand the 4thzones deserve particular attention. The following elements: oil products (29.7% - 54.0%), nitrates (in NO3), chloroform and fluorides make a major contribution to the value of risk. In all other zones, irrespective of the value of exposure factors, total hazard quotients indicate alarming and unacceptable risk levels at HIMe= from 4 to 8.67; and at HI95th Perc= from 8.7 to 16.8.

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